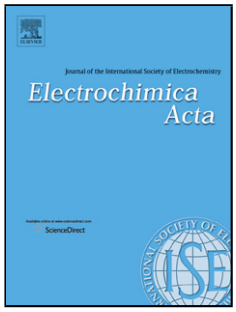
Accepted Manuscript



Title: High power nano-Nb_2O_5 negative electrodes for lithium-ion batteries

Author: Mechthild Lübke Afriyanti Sumboja Ian Johnson Dan J.L. Brett Paul R. Shearing Zhaolin Liu Jawwad A. Darr

PII: S0013-4686(16)30261-4
DOI: http://dx.doi.org/doi:10.1016/j.electacta.2016.01.226
Reference: EA 26608

To appear in: *Electrochimica Acta*

Received date: 21-11-2015
Revised date: 27-1-2016
Accepted date: 31-1-2016

Please cite this article as: Mechthild Lübke, Afriyanti Sumboja, Ian Johnson, Dan J.L.Brett, Paul R.Shearing, Zhaolin Liu, Jawwad A.Darr, High power nano-Nb2O5 negative electrodes for lithium-ion batteries, Electrochimica Acta http://dx.doi.org/10.1016/j.electacta.2016.01.226

High power nano-Nb_2O_5 negative electrodes for lithium-ion batteries

Mechthild Lübke,[1,2] Afriyanti Sumboja,[2] Ian Johnson,[1] Dan J.L. Brett,[3] Paul R. Shearing,[3]

Zhaolin Liu[2] and Jawwad A. Darr[1]*

[1] Department of Chemistry, University College London, 20 Gordon Street, London, WC1H 0AJ, U.K.
[2] Institute of Materials Research and Engineering (IMRE), A*STAR (Agency for Science, Technology and Research), 2 Fusionopolis Way, Innovis #08-03, Singapore 138634, Republic of Singapore.
[3] Electrochemical Innovation Lab, Department of Chemical Engineering, University College London, Torrington Place, London, WC1E 7JE, U.K.

*Corresponding author: Professor Jawwad A. Darr
Christopher Ingold Laboratories
Department of Chemistry
University College London
20 Gordon Street
London, WC1H 0AJ
j.a.darr@ucl.ac.uk
Office telephone: +44 (0)20 7679 4345
Fax: +44 (0)20 7679 7463
Mobile: +44 (0)7941 928875
Research webpages http://www.ucl.me.uk

Highlights

- High surface area semi-crystalline Nb_2O_5 can be directly synthesized *via* CHFS.
- The as-obtained Nb_2O_5 displayed excellent electrochemical performance.
- At high current rates, the Nb_2O_5 behaved like an oxide supercapacitor material.
- Pseudocapacitive reactions contributed to >63% of the total charge at 5 mV s^{-1}.